

### ABSTRACT OF THE DISCLOSURE

A spin-tunnel transistor having a tunnel barrier layer formed of an antiferromagnetic material which is exchange coupled with a first or second ferromagnetic metal layer of a base B formed adjoining to the antiferromagnetic material, so as to fix magnetization of the adjoining ferromagnetic layer. The base B includes a nonmagnetic metal layer which is formed between the first and second ferromagnetic metal layers and decouple magnetization coupling between the first and second ferromagnetic metal layers. The base B is formed between a collector and an emitter to form tri-terminal device. Those spin-tunnel transistor may be used as a sensor of a magnetic reproducing head used in a hard disk drive.

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